ANX D TO
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DESCRIPTION OF TECHNICAL SPECIFICATION FOR 1000-1200 MA/150 KV X-RAY MACHINE WITH STANDARD ACCESSORIES, QUANTITY-01, (DP-5)

(Tenderer must fill up this format without changing its basic structure)

Ser no	Description	Technical specification	To be filled up by the principal / Manufacture
(a)	(b)	(c)	(d)
1.	**General Specification:** General specifications are as under :		
	a. Nomenclature	**1000-1200 MA/150 KV. X-Ray Machine with Standard Accessories, PVMS-210004, Qty-01**	
	b. Brand	To be mentioned.	
	c. Model	To be mentioned. Model should be latest.	
	d. Name of Manufacture with Complete Address	To be mentioned.	
	e. Name of Principal with Complete Address	To be mentioned.	
	f. Name of Local Agent with Complete Address	To be mentioned.	
	g. Year of Production	Not before the calendar year of contract.	
	h. Country of Origin & Manufacturer	**Group-A:** Bangladesh, Australia, Austria, Belgium, Brazil, Canada, Denmark, Finland, France, Germany, Indonesia, Ireland, Japan, Luxemburg, Netherlands, Norway, Singapore, Spain, Sweden, Switzerland, Turkey, UK, USA, South Korea & Italy.	
	j. Port of shipment	Same country of manufacture for Main System. Other Items/ Equipment's/ Accessories and Local supplied item to be mentioned specifically.	
2.	**Function/Capability:** To be mentioned.		
3.	**Features/Facilities:** Following technical specifications/features/facilities are to be available.		
	a. State of the art high end Digital Radiography System with Artificial Intelligence based auto positioning and processing with 3D Camera (If possible)		
	b. Integrated Flat detector one for Bucky stand and one for patient table.		
	c. Should have AEC with measurement chamber selection.		
	d. Should have automatic X-ray control system for fully automatic calculation and optimization of the exposure data based on fluoroscopic values		
	e. The system should have Digital Chest X-ray facilities with detector Bucky stand.		
	f. The system should have DICOM 3.0 connectivity facilities		
	g. Continuous monitoring facilities of X-ray tube load and Anode heat storage capacity to avoid the risk of overloading.		
	h. Memory for different radiographic examinations factors should be available.		
	j. Anatomical Programmers can be available.		
	k. Light beam Collimator to be available.		
	l. Diagnostic X-Ray Table with auto tracking (If possible)		
	m. Vertical Bucky Stand with auto tracking (If possible)		
	n. Removable Grids for Vertical Bucky and table Bucky		
	p. Integrated X-Ray and DR console		
	q. The Detector and the Console software should be from the same manufacturer and integrated with the X-ray console.		

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4.	**Patient Table:** a. Table with flat table top. Auto tracking facility for table height adjustment, longitudinal tube travel and tube rotation. b. Max. Patient Coverage : 190±2 cm c. Table height : 52cm – 95cm (continuously adjustable) d. Max patient weight : 300Kg or more e. Table top dimensions : 220 mm or more (motor-driven) with 30 mm/sec or more f. Longitudinal travel (Table Top): ± 48 cm g. Transverse travel (Table Top): ± 14 cm		
5.	**High Frequency Generator** a. Microprocessor controlled high frequency X-Ray Generator should be of latest technology with constant output with low ripple frequency b. Generator capacity must be 80 KW or more c. KVP range 40 KV-150 KV d. mA Output Should be 800mA @100 KV ; 1000 mA @80Kv or more e. Exposure time should be 1 ms or 10 Sec. f. Generator capacity must be capable of giving mAs 500mAs or more. g. Automatic exposure control should be available with 3 AEC field sensors on table and wall stand each. h. Anatomical Protocol (APR) must be available and user must be able to add any protocol which is needed j. The generator must be completely integrated with console workstation and it should be possible to control all exposure parameters from the software console.		
6.	**X-ray Tube :**		
	a. 10" multi-functional touch screen display on tube housing for easy and undisrupted operation next to patient.		
	b. Nominal voltage : 150 kV or more		
	c. Dual Focal Spot : 0.6/1.2 or more		
	d. Anode heat storage capacity : 600 KHU or more		
	e. Anode drive frequency : 180 Hz or more		
	f. Total filtration : ≥ 2.5 mm Al		
	g. Should have motorized auto filter programmed with APR		
	h. Patient Dose Measurement should be possible using DAP meter		
7.	**Primary collimator:**		
	a. Manual or Motorized control pre-set via organ programs		
	b. Inherent filtration at 80kV : 1 mm Al		
	c. Cu-prefilter : Motorized & position able, 0.1 mm, 0.2 mm, 0.3 mm		
	d. Collimator rotation : Up to max ± 45°		
	e. Full field light locazier : 4 W High power LED.		
	f. An integrated measurement chamber in the collimator housing to measures the dose area product in µGy/m2 (or mGy/cm²)		
8.	**Ceiling mounted tube support:**		
	a. Horizontal travel range : 345 cm or more		
	b. Transverse travel range : 220 cm or more		
	c. Vertical travel range : 150 cm or more (manual or motorized)		
	d. Rotation around vertical axis : -155° to +180° manual		
	e. Rotation around horizontal axis: ± 140°		

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9.	**Flat Detector for Table:**		
	a. 35 cm x 43 cm or more Flat Panel Solid State wireless detector.		
	b. Material	: Amorphous silicon with CsI scintillator	
	c. Resolution Matrix	: 2350 x 2865 approx or more.	
	d. Pixel size	: 148µm or less	
	e. DQE	: 70% at 0.05 lp/mm	
	f. Digitization Depth	: 16 bits	
	g. Data Transmission	: 2s preview, 5 s full image	
	h. Weight	: 3.5 kg or less	
	j. Max. Load Capacity patient.	: 300 kg with recumbent patient, 100 kg with standing	
	k. Battery type & Capacity to be	: Lithium-ion, rechargeable, exchangeable, Capacity mentioned	
	l. Charging Location	: Table Detector Tray or Bucky Stand Detector Tray.	
10.	**Flat Detector for Bucky Stand:**		
	a. 43 cm x 43 cm or more Flat Panel Solid State fixed detector.		
	b. Material	: Amorphous silicon with CsI scintillator	
	c. Resolution Matrix	: 2360 x 2860 approx.	
	d. Pixel size	: 148µm or less	
	e. DQE	: 65% at 0.05 lp/mm	
	f. Digitization Depth	: 16 bits	
	g. Data Transmission	: 3.5 s preview, 6 s full image	
11.	**Chest Detector Stand:**		
	a. Auto tracking facility of x-ray tube and detector during height adjustments.		
	b. Vertical Travel Range	: 30 cm to 170 cm or more	
	c. Detector Unit Tilt	: -20° to +90°	
12.	**Control System:**		
	a. Complete system operation with control of generator, tube, and imaging system from a single integrated console.		
	b. The examination procedure is controlled via the selection of clinical protocols.		
	c. The generator parameters and collimator settings, including additional filtration as well as image processing parameters, are automatically set via the selected clinical protocol.		
	d. Manual positioning of the x-ray tube.		
	e. Automatic positioning of z-axis (SID) with motorized adjustment of ceiling support.		
	f. Automatic centering of the table detector to the x-ray tube when x-ray tube is centered in the transverse axis.		
	g. Collision monitoring of z-axis of the tube.		
13.	**Digital Imaging System:**		
	a. The entire control and communication of the radiography system including digital image processing takes place from the imaging system. High resolution digital radiography system with DICOM network connection for image processing and image display.		
	b. Computer : Intel Xeon or equivalent microprocessor with speed 3.3 GHz, 16 GB or more RAM, SATA & SSD Hard Drive, USB 3.0 and inface cards.		
	c. Operating System : Windows 10 Enterprise 64 bit or equivalent.		
	d. Image storage : 15,000 RAD images.		
	e. Diagnostic Monitor : 23" tiltable multitouch full HD color monitor with maximum brightness 400 cd/m^2		

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	f. Body Model with visual selection of clinical protocol steps including adding, deleting or replacing as well as selection of generator and AEC parameters with patient size adapter.		
	g. Clinical protocol steps combined of multiple imaging parameters for particular body parts and imaging exposure and postprocessing. Clinical protocol steps can be stored, customized and arranged in clinical protocols using the advanced clinical protocol editor. The system should automatically select the next clinical protocol step in the chosen clinical protocol as each exam step is completed.		
	h. Smart AI based image processing engine that deploys smart technologies to produce superb, consistent images with neural networks detecting the collimator edges extremely efficiently, and adaptive noise cancelling removing image noise, which will also enable low dose settings for all clinical tasks		
	j. Gridless acquisition of free exposures, especially Thorax using AI functionalities for superior contrast and easier handling		
	k. Real time image of the patient at the workstation with the help of 3D Camera.		
	l. Long leg and full spine image acquisition facility with the help of smart automatic image stitching. Tilting acquisitions of up to 3 images on the patient table and up to 4 images on bucky stand. Multipurpose stand must be provided to stabilize the patient during long leg/full spine image acquisition with bucky stand. 3D Camera must be used to enable accurate collimation and to help users to see if they can perform an exam with fewer images.		
14.	**Dry Laser/ Digital Imager/ Film Printer**		
	a. Resolution	: 320 dpi or more	
	b. Spot Size	: 100 µm or smaller	
	c. Film Size	: 8" x 10", 10" x 12", 11" x 14", 14" x 14" & 14" x 17"	
	d. Throughput	: 70 Sheets (14" x 17")/ hour or more	
	e. Supply Magazine/Tray: At least 2 size film on-line in two supply magazine.		
	f. Tray/ Magazine feature: All 5 size (8" x 10", 10" x 12", 11" x 14", 14" x 14" & 14" x 17") film printing facility from each magazine.		
	g. DICOM Compatible Digital Dry imager for film size 8" x 10" to 14" x 17"		
15.	**Accessories & Others:**		
	a. Lead glass	: 400 x 600 mm, 1.5 mm pb or equivalent	
	b. 2 Ton Air Conditioner, Qty-01 No (Brand, Model, Country of Origin and Manufacturer - To be mentioned)		
	c. Lead sheet for door		
	d. Voltage Stabilizer Compatible for x-ray Machine (Brand, Model, Capacity with backup time, Country of Origin and Manufacturer - To be mentioned)		
	e. Online UPS for Workstation (Brand, Model, Capacity with backup time, Country of Origin and Manufacturer - To be mentioned)		
	f. Equipment table and operator's chair		
	g. Thermal laser printer for report printing (Brand, Model, Country of Origin and Manufacturer - To be mentioned)		
16.	**Complete BOQ/BOM.** All Foreign & Local supplied items to be listed separately for full range of operation of the equipment as per following table:		

Ser	Name of item	Qty	Brand	Model	Country of Origin	Country of Manufacturer	Remarks

17.	**Foreign Training**		
	a. Operational Training: 01x Radiologist & 02x Radiographer for 5 days (without journey period).		
	b. Repair/Maintenance Training	: Not required	
18.	**Local Training**		
	a. Operational Training	: 02x Operator for 02 weeks.	
	b. Repair/Maintenance Training	: 02x EM Tech for 02 weeks.	

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19.	**Warranty** Inspection	: 05 (Five) years from the date of issuance of Note (I/Note).	
20.	**After sales service**	: 10 (Ten) years from the date of installation	
21.	**Certificate of quality**	: FDA/CE/JIS Certificate must be submitted with offer.	
22.	**Books and Publication**		
	Following books and publication will be supplied in English along with the stores free of cost. a. Operational manual – 03 Copies (01x Original & 02x Photocopies) b. Repair/Maint/Service manual including details circuit/Schematic diagrams– 03 Copies (01x Original & 02x Photocopies) c. Parts Catalogue/Master Parts list– 03 Copies (01x Original & 02x Photocopies) d. 100% Spare Parts list with price – 02 x Original copies **Note:** In addition to hard copy, a soft copy CD/DVD containing all books and publications will be supplied by the supplier free of cost.		
23.	If any other feature/items not listed above but required for full range of operation of the offered equipment to be mentioned and to be supplied with main equipment.		

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